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NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2		"Ask CAS" for self-help around the clock
NEWS	3	Feb 24	PCTGEN now available on STN
NEWS	4	Feb 24	TEMA now available on STN
NEWS	5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS	6	Feb 26	PCTFULL now contains images
NEWS	7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
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NEWS	9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS	10	Apr 11	Display formats in DGENE enhanced
NEWS	11	Apr 14	MEDLINE Reload
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NEWS	21	Jun 06	Simultaneous left and right truncation added to CBNB
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NEWS	23	Jun 20	2003 edition of the FSTA Thesaurus is now available
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NEWS	30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS	31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
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NEWS	33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS	34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003

NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003

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FILE 'HOME' ENTERED AT 16:22:38 ON 15 AUG 2003

=> file medline, biosis, wpids, hcaplus, uspatful, dgene, embase, jicst, fsta		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21

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=> s T. molitor or Tenebrio molitor
 L1 5372 T. MOLITOR OR TENEBRIO MOLITOR

=> s l1 and cDNA
 L2 256 L1 AND CDNA

=> s l2 and thermal hysteresis protein
 L3 69 L2 AND THERMAL HYSTERESIS PROTEIN

=> d l3 ti abs ibib 1-5

L3 ANSWER 1 OF 69 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN

TI New cDNA polynucleotide encoding a **thermal hysteresis protein** which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.

AN 2002-090137 [12] WPIDS

AB WO 200194378 A UPAB: 20020221

NOVELTY - A cDNA polynucleotide (I) comprising a nucleotide sequence for encoding a **thermal hysteresis protein** which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) a mRNA polynucleotide (II) comprising a nucleotide sequence for encoding thermal hysteresis proteins derived from the Tenebrionoidea Superfamily transcribed from (I);

(2) a DNA or RNA probe having a sequence complementary or identical to a sequence of contiguous nucleotides for at least a portion of (I);

(3) a recombinant vector containing (I);

(4) a **thermal hysteresis protein**, preferably an endogenous Type III anti-freeze proteins, derived from the Tenebrionoidea Superfamily which lowers the freezing point of a solution without effecting the melting point of the solution;

(5) a consensus sequence with a nucleotide sequence selected from one of the four 481 nucleotide sequences (S1-S4) defined in the specification;

(6) a consensus sequence with an amino acid sequence selected from the 133 (S5), 134 (S6), another 134 (S7), another 134 (S8) amino acid sequence defined in the specification;

(7) a consensus sequence with the 133 amino acid sequence (S9) defined in the specification;

(8) a primer having a nucleotide sequence selected from P1-P3;

(9) a method (M1) for producing a polypeptide having antifreeze properties comprising forming a cloning vector with a Tm 12.86 family member gene encoding an antifreeze polypeptide, transferring genes of the cloning vector into DNA of host cell to create a transformed cell, expressing a mRNA sequence and a translated amino acid sequence from the recombinant expression vector, the sequence being isoforms of the Tm 12.86 **T. molitor** antifreeze polypeptide;

(10) a method (M2) for providing antifreeze or recrystallization inhibition properties to a subject formulation comprising incorporating at least 0.1 micrograms to 1 mg of an activated polypeptide into 1 ml of a subject formulation to obtain recrystallization inhibition or 1 mg to 25 mg of the activated polypeptide into 1 ml of a subject formulation to thermal hysteresis;

(11) a Tm 12.86 antibody/antiserum;

(12) a recrystallization inhibition method (M3) for determining the presence, relative concentration, and/or activity of thermal hysteresis proteins comprising providing a proteinaceous composition in a solvent to form a test solution, flash freezing the solution, raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within the solution, maintaining the frozen solution at the annealing temperature for a length of time sufficient to allow for recrystallization, monitoring the ice crystal grain size changes over time, and determining the presence of functional thermal hysteresis proteins in the solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution;

(13) a method for quantitatively assessing the extent of recrystallization occurring in frozen foods, and the impact of solution additives to inhibit or limit recrystallization according to the process defined in M3; and

(14) a method for quantitatively assessing and comparing the effectiveness of cryoprotective solutions on the extent of recrystallization occurring in cryopreserved cells, tissues, solutions and the like, according to the process defined in M3.

CGCGGATCCCTCACCGACGAACAG (P1);
GAGAGGATAACTAATTGAGCTCGCC (P2); and
CGCGGATCCCTGACCGAGGCACAA (P3).

USE - The activated anti-freeze protein is incorporated into:

- (a) plant, produce or fish in an amount sufficient to provide antifreeze protection;
- (b) a region of a target tissue in an amount sufficient to provide antifreeze protein controlled limited tumor cell or target tissue cryoinjury during cryosurgery;
- (c) hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues by incorporating the protein into the cells, tissue, or cell membranes in a controlled amount sufficient to provide antifreeze protection;
- (d) de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, cosmetic products, machinery and plant surfaces; or
- (e) a food product in an amount sufficient to provide antifreeze protection to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage.

The polynucleotides for the activated protein are used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatization. The Tm 12.86 antibody/antiserum is used as a screening device to identify positive recombinant plaques containing cloned inserts capable in an expression vector system to produce recombinant products recognized by the antibody/antiserum. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species.

M3 is used for concurrent multiple sample testing of solutions which includes the 'sandwich' method; and application via a 96 well plate device (all claimed).

Dwg.0/8

ACCESSION NUMBER: 2002-090137 [12] WPIDS
DOC. NO. CPI: C2002-027870
TITLE: New cDNA polynucleotide encoding a
thermal hysteresis protein
which is a Type III anti-freeze protein derived from the Tenebrionoidea Superfamily, useful for providing antifreeze protection to improve the quality of food.
DERWENT CLASS: C06 D16
INVENTOR(S): HORWATH, K L; MEYERS, K L; EASTON, C M; MYERS, K L
PATENT ASSIGNEE(S): (EAST-I) EASTON C M; (HORW-I) HORWATH K L; (MYER-I) MYERS K L; (UYNY) UNIV NEW YORK STATE RES FOUND; (MEYE-I) MEYERS K L
COUNTRY COUNT: 91
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG

WO 2001094378	A1	20011213	(200212)*	EN	231
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ					
NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES					
FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS					
LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL					
TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
AU 2001075389	A	20011217	(200225)		
US 2002172951	A1	20021121	(200279)		
US 2002173024	A1	20021121	(200279)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001094378	A1	WO 2001-US18532	20010607
AU 2001075389	A	AU 2001-75389	20010607
US 2002172951	A1 Provisional	US 2000-210446P	20000608
		US 2001-876348	20010607
US 2002173024	A1 Provisional	US 2000-210446P	20000608
		US 2001-876796	20010607

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001075389	A Based on	WO 200194378

PRIORITY APPLN. INFO: US 2000-210446P 20000608; US 2001-876348
20010607; US 2001-876796 20010607

L3 ANSWER 2 OF 69 HCAPLUS COPYRIGHT 2003 ACS on STN

TI Cloning of **Tenebrio molitor** antifreeze protein cDNAs, their properties and recombinant expression, and application as recrystn. inhibition factors thereof

AB The invention provides protein and cDNA sequences for thermal hysteresis proteins (THPs) or antifreeze proteins (AFPs) derived from **Tenebrio molitor**, members of Tenebrionoidea Type AFP Tm12.86 multigene family which lower the f.p. of a soln. without effecting the m.p. These proteins include Tm12.86, Tm2.2, Tm3.4, Tm3.9, Tm7.5, Tm2.3, Tm12.84 and distantly related Tm13.17 (closely related to B1 assessor gland protein of **T. molitor**). The invention also discloses essential biochem. and cellular tools that make possible more direct cellular investigations, and an assessment of the relation between **thermal hysteresis protein** (THP) levels and antifreeze activity (both thermal hysteresis and recrystn. inhibition [RI]). Related methods for prepg. recombinant said proteins and for providing antifreeze or recrystn. inhibition properties to a subject formulation. The purified, expressed THP protein can be directly added to an aq. soln. to depress the f.p., or transformed organisms expressing THP can be added to items which will be stored frozen. Also provided is a recrystn. inhibition method for detg. the presence, relative concn., and/or activity of thermal hysteresis proteins comprising: providing a proteinaceous compn. in a solvent to form a test soln.; flash freezing said soln.; raising the temp. of the frozen soln. to an appropriate annealing temp. that allows for a partial melt, while limiting heterogeneity in ice grain sizes within said soln.; maintaining said frozen soln. at the annealing temp. for a length of time sufficient to allow for recrystn.; monitoring the ice crystal grain size changes over time; and detg. the presence of functional thermal hysteresis proteins in said soln. given the retention of significantly smaller ice crystal grain sizes relative to at least one control soln. These THP can be used for new techniques and compns. suitable for improving the preservation characteristics of org. materials at low temps., including storage of frozen foods, plasma, cells, plants, etc.

ACCESSION NUMBER: 2001:904220 HCAPLUS

DOCUMENT NUMBER: 136:49386

TITLE: Cloning of **Tenebrio molitor** antifreeze protein cDNAs, their properties and recombinant expression, and application as recrystn. inhibition factors thereof

INVENTOR(S): Horwath, Kathleen L.; Myers, Kevin L.; Easton, Christopher M.

PATENT ASSIGNEE(S): The Research Foundation of State University of New York, USA

SOURCE: PCT Int. Appl., 363 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001094378	A1	20011213	WO 2001-US18532	20010607

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 2002172951	A1	20021121	US 2001-876348	20010607
US 2002173024	A1	20021121	US 2001-876796	20010607

PRIORITY APPLN. INFO.: US 2000-210446P P 20000608

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 3 OF 69 HCAPLUS COPYRIGHT 2003 ACS on STN

TI Properties and uses of **Tenebrio molitor** thermal hysteresis (antifreeze) proteins (THP)

AB Thermal hysteresis (antifreeze) proteins (THP) that have up to 100 times the specific activity of fish antifreeze proteins have been isolated and purified from the common yellow mealworm beetle, **Tenebrio molitor**. **Tenebrio molitor** is a freeze-tolerant pest of stored grains in temperate regions, and it is the thermal hysteresis activity of their hemolymph that allows the insects to depress their f.p.s. in the presence of ice or ice nucleators. Internal sequencing of the proteins, leading to cDNA cloning and prodn. of the protein in bacteria, has confirmed the identity and activity of the 8.4 to 10.7 kDa THP. THPs are Thr- and Cys-rich proteins composed largely of 12-amino-acid repeats of Cys-Thr-Xaa-Ser-Xaa-Xaa-Cys-Xaa-Ala-Xaa-Thr. At a concn. of 55 .mu.g/mL, the THP depressed the f.p. 1.6 .degree.C below the m.p., and at a concn. of .apprx.1 mg/mL the THP or its variants can account for the 5.5 .degree.C of thermal hysteresis found in **Tenebrio** larvae. THPs function by an absorption-inhibition mechanism and produce oval-shaped ice crystals with curved prism faces. The purified, expressed THP protein can be directly added to an aq. soln. to depress the f.p., or transformed organisms expressing THP can be added to items which will be stored frozen. It is thus suggested that THP can be used for new techniques and comps. suitable for improving the preservation characteristics of org. materials at low temps., including storage of frozen foods, drugs, plasma, cells, plants, etc.

ACCESSION NUMBER: 1999:34995 HCAPLUS

DOCUMENT NUMBER: 130:120468

TITLE: Properties and uses of **Tenebrio molitor** thermal hysteresis (antifreeze) proteins (THP)

INVENTOR(S): Graham, Laurie A.; Liou, Yih-cherng; Walker, Virginia K.; Davies, Peter L.

PATENT ASSIGNEE(S): Queen's University At Kingston, Can.

SOURCE: PCT Int. Appl., 88 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 9900493	A1	19990107	WO 1998-CA618	19980625
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6392024	B1	20020521	US 1997-882907	19970626
AU 9880970	A1	19990119	AU 1998-80970	19980625
AU 747466	B2	20020516		
EP 990032	A1	20000405	EP 1998-930588	19980625
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002507889	T2	20020312	JP 1999-505174	19980625
US 2002165383	A1	20021107	US 2002-32658	20020102
PRIORITY APPLN. INFO.: US 1997-882907 A 19970626				
WO 1998-CA618 W 19980625				
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT				

L3 ANSWER 4 OF 69 HCAPLUS COPYRIGHT 2003 ACS on STN
 TI Hyperactive antifreeze protein from beetles
 AB The authors have purified and cloned 4 thermal hysteresis proteins from a fat body cDNA library which possess up to 100-times the specific activity of fish antifreeze proteins from the common yellow mealworm beetle **Tenebrio Molitor**. The proteins are threonine and cysteine rich, of relative mol. mass 8,400, composed largely of 12-amino acid repeats. It's estd. that a concn. of 1 mg/mL of this protein can account for the 5.5.degree.C of thermal hysteresis found in **Tenebrio Molitor**.

ACCESSION NUMBER: 1997:565551 HCAPLUS
 DOCUMENT NUMBER: 127:275629
 TITLE: Hyperactive antifreeze protein from beetles
 AUTHOR(S): Graham, Laurie A.; Liou, Yih-Cherng; Walker, Virginia K.; Davies, Peter L.
 CORPORATE SOURCE: Dep. Biochem. Biol., Queen's Univ., Kingston, ON, K7L 1N6, Can.
 SOURCE: Nature (London) (1997), 388(6644), 727-728
 CODEN: NATUAS; ISSN: 0028-0836
 PUBLISHER: Macmillan Magazines
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L3 ANSWER 5 OF 69 USPATFULL on STN
 TI Human genes and gene expression products
 AB This invention relates to novel human polynucleotides and variants thereof; their encoded polypeptides and variants thereof, to genes corresponding to these polynucleotides and to proteins expressed by the genes. The invention also relates to diagnostic and therapeutic agents employing such novel human polynucleotides, their corresponding genes or gene products, e.g., these genes and proteins, including probes, antisense constructs, and antibodies.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 ACCESSION NUMBER: 2003:64662 USPATFULL
 TITLE: Human genes and gene expression products
 INVENTOR(S): Williams, Lewis T., Mill Valley, CA, UNITED STATES
 Escobedo, Jaime, Alamo, CA, UNITED STATES
 Innis, Michael A., UNITED STATES
 Garcia, Pablo Dominguez, San Francisco, CA, UNITED STATES

Sudduth-Klinger, Julie, Kensington, CA, UNITED STATES
 Reinhard, Christoph, Alameda, CA, UNITED STATES
 Randazzo, Filippo, Oakland, CA, UNITED STATES
 Kennedy, Giulia C., San Francisco, CA, UNITED STATES
 Pot, David, Arlington, VA, UNITED STATES
 Kassam, Altaf, Oakland, CA, UNITED STATES
 Lamson, George, Moraga, CA, UNITED STATES
 Drmanac, Radjoe, Palo Alto, CA, UNITED STATES
 Dickson, Mark, Hollister, CA, UNITED STATES
 Labat, Ivan, Mountain View, CA, UNITED STATES
 Jones, Lee William, Sunnyvale, CA, UNITED STATES
 Stache-Crain, Birgit, Sunnyvale, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003044783	A1	20030306
APPLICATION INFO.:	US 2001-803719	A1	20010309 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-188609P	20000309 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Chiron Corporation Intellectual Property -R440, PO Box 8097, Emeryville, CA, 94662-8097	
NUMBER OF CLAIMS:	15	
EXEMPLARY CLAIM:	1	
LINE COUNT:	23459	

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NEWS	33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS	34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003

NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003

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 NEWS LOGIN Welcome Banner and News Items
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 NEWS WWW CAS World Wide Web Site (general information)

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=> file medline, uspatful, dgene, wpids, uspatful		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'MEDLINE' ENTERED AT 14:58:41 ON 15 AUG 2003

FILE 'USPATFULL' ENTERED AT 14:58:41 ON 15 AUG 2003
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FILE 'DGENE' ENTERED AT 14:58:41 ON 15 AUG 2003
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FILE 'WPIDS' ENTERED AT 14:58:41 ON 15 AUG 2003
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=> s tenebrio molitor
 L1 1953 TENEBRIO MOLITOR

=> s tenebrionoidea superfamily
 L2 53 TENEBRIONOIDEA SUPERFAMILY

=> s l2 and cDNA
 L3 53 L2 AND CDNA

=> s l3 and thermal hysteresis
 L4 53 L3 AND THERMAL HYSTERESIS

=> s l1 and l4
 L5 47 L1 AND L4

=> d l5 ti abs ibib tot

L5 ANSWER 1 OF 47 USPATFULL on STN
 TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
 AB **Thermal hysteresis** proteins and their nucleotide sequences derived from the **Tenebrionoidea Superfamily** which lower the freezing point of a solution without effecting the melting point. Related methods for preparing said proteins and for providing antifreeze or recrystallization inhibition properties to a subject formulation.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
 ACCESSION NUMBER: 2002:307900 USPATFULL

TITLE: Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
INVENTOR(S): Horwath, Kathleen L., Endwell, NY, UNITED STATES
Easton, Christopher M., Ithaca, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002173024	A1	20021121
APPLICATION INFO.:	US 2001-876796	A1	20010607 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-210446P	20000608 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901	
NUMBER OF CLAIMS:	40	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	131 Drawing Page(s)	
LINE COUNT:	10082	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 2 OF 47 USPATFULL on STN
TI Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
AB A recrystallization inhibition method for determining the presence, relative concentration, and/or activity of **thermal hysteresis** proteins comprising: providing a proteinaceous composition in a solvent to form a test solution; flash freezing said solution; raising the temperature of the frozen solution to an appropriate annealing temperature that allows for a partial melt, while limiting heterogeneity in ice grain sizes within said solution; maintaining said frozen solution at the annealing temperature for a length of time sufficient to allow for recrystallization; monitoring the ice crystal grain size changes over time; and determining the presence of functional **thermal hysteresis** proteins in said solution given the retention of significantly smaller ice crystal grain sizes relative to at least one control solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
ACCESSION NUMBER: 2002:307828 USPATFULL
TITLE: Nucleic acid sequences encoding type III tenebrio antifreeze proteins and method for assaying activity
INVENTOR(S): Horwath, Kathleen L., Endwell, NY, UNITED STATES
Meyers, Kevin L., Trumansburg, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002172951	A1	20021121
APPLICATION INFO.:	US 2001-876348	A1	20010607 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-210446P	20000608 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Mark Levy, SALZMAN & LEVY, Ste. 902, 19 Chenango St., Binghamton, NY, 13901	
NUMBER OF CLAIMS:	34	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	131 Drawing Page(s)	
LINE COUNT:	10121	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L5 ANSWER 3 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU76232 Protein DGENE
AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 clone/his tag fusion protein of the invention. This **cDNA** was created to facilitate purification of the Tm 13.17 protein and to try to enhance the anti-freeze activity of the recombinant protein. Note: This sequence differs from the sequence given in figure 5.11 for the Tm 13.17 clone/His tag fusion protein.

ACCESSION NUMBER: AAU76232 Protein DGENE
TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Tm 13.17 clone/His tag fusion protein #2.

L5 ANSWER 4 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10056 Protein DGENE
AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower

the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the consensus sequence of the B1, B2 and AFP3 anti-freeze protein sequences.

ACCESSION NUMBER: AAU10056 Protein DGENE
 TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 DESCRIPTION: Consensus sequence of B1, B2 and AFP-3 anti-freeze protein sequences.

L5 ANSWER 5 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10055 Protein DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold

protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21125
DESCRIPTION: Tm 7.5 clone/His tag fusion protein.

L5 ANSWER 7 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10053 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.9 clone/his tag fusion protein of the invention. This **cdNA** was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10053 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent

LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21124
DESCRIPTION: Tm 3.9 clone/His tag fusion protein.

L5 ANSWER 8 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10052 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.9 clone/his tag fusion protein. This protein was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10052 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21123
DESCRIPTION: Tm 3.9 clone/His tag fusion protein.

L5 ANSWER 9 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10051 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a

nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.4 clone/his tag fusion protein minus the signal peptide of the invention. This **cDNA** was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10051 Protein DGENE
 TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: N-PSDB: AAS21122
 DESCRIPTION: Tm 3.4 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 10 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10050 Protein DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to

reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 clone/his tag fusion protein of the invention. This **cdNA** was created to facilitate purification of the Tm 13.17 protein and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10050 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UJNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21121
DESCRIPTION: Tm 3.4 clone/His tag fusion protein.

L5 ANSWER 11 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10049 Protein DGENE

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 clone/his tag fusion protein minus the

signal peptide of the invention. This cDNA was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10049 Protein DGENE
TITLE: New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21120
DESCRIPTION: Tm 13.17 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 12 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10048 Protein DGENE

AB This invention relates to a cDNA polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 clone/His tag fusion protein of the invention. This cDNA was created to facilitate purification of the Tm 13.17 protein and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10048 Protein DGENE

TITLE: New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21119
DESCRIPTION: Tm 13.17 clone/His tag fusion protein.

L5 ANSWER 13 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10047 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 2.3 clone/his tag fusion protein minus the signal peptide of the invention. This **cdNA** was created to try to enhance the anti-freeze activity of the recombinant Tm 2.3 protein.

ACCESSION NUMBER: AAU10047 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21118
DESCRIPTION: Tm 2.3 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 14 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10046 Protein DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 2.3 clone/his tag fusion protein of the invention. This **cDNA** was created to facilitate purification of the Tm 2.3 protein and to try to enhance the anti-freeze activity of the recombinant Tm 2.3 protein.

ACCESSION NUMBER: AAU10046 Protein DGENE

TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: N-PSDB: AAS21117

DESCRIPTION: Tm 2.3 clone/His tag fusion protein.

L5 ANSWER 15 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10045 Protein DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into

plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents the Tm 2.2 clone/his tag fusion protein minus the signal peptide of the invention. This **cdna** was created to try to enhance the anti-freeze activity of the recombinant Tm 2.2 protein.

ACCESSION NUMBER: AAU10045 Protein DGENE
 TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: N-PSDB: AAS21116
 DESCRIPTION: Tm 2.2 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 16 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10044 Protein DGENE

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to

create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 2.2/His tag anti-freeze protein of the invention, this was created to facilitate purification of the protein in an attempt to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10044 Protein DGENE
TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21115
DESCRIPTION: Tm 2.2 clone-His tag fusion protein.

L5 ANSWER 17 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10042 Protein DGENE
AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.9 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAU10042 Protein DGENE
TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea**

Superfamily, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21113
DESCRIPTION: Tm 3.9 clone anti-freeze protein.

L5 ANSWER 18 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10040 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.4 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAU10040 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: N-PSDB: AAS21112

DESCRIPTION: Tm 3.4 clone anti-freeze protein.

L5 ANSWER 19 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10038 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 2.2 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAU10038 Protein DGENE

TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UANY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: N-PSDB: AAS21110; AAS21111

DESCRIPTION: Tm 2.2 clone anti-freeze protein.

L5 ANSWER 20 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAU10036 Protein DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower

the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm13.17 anti-freeze protein of the invention.

ACCESSION NUMBER: AAU10036 Protein DGENE
 TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: N-PSDB: AAS21109
 DESCRIPTION: Tm13.17 anti-freeze protein.

L5 ANSWER 21 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10035 Peptide DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to

create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the N terminal sequence of the Tm12.86 anti-freeze protein determined by mass spectrometry to ensure that completely pure antifreeze protein had been obtained.

ACCESSION NUMBER: AAU10035 Peptide DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Tm12.86 antifreeze peptide N terminal fragment.

L5 ANSWER 22 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21134 **cdNA** DGENE

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a consensus sequence of the Tm 12.84 isoforms, Tm 13.17, B1,B2 and AFP3 of the invention.

ACCESSION NUMBER: AAS21134 **cdNA** DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 DESCRIPTION: Consensus sequence of Tm12.84 isoforms with Tm 13.17 and B1/B2 and AFP3.

L5 ANSWER 23 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21133 **cdNA** DGENE

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a consensus sequence of the Tm 12.84 isoforms of the invention with the family members Tm 13.17, B1 and B2.

ACCESSION NUMBER: AAS21133 **cdNA** DGENE

TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

DESCRIPTION: Consensus sequence of Tm12.84 isoforms with Tm 13.17 with B1 and B2.

L5 ANSWER 24 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21132 cDNA DGENE
AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents a consensus sequence of the Tm 12.84 isoforms of the invention with Tm 13.17.

ACCESSION NUMBER: AAS21132 cDNA DGENE
TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Consensus sequence of Tm12.84 isoforms with Tm 13.17.

L5 ANSWER 25 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21131 cDNA DGENE
AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze

protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents a consensus sequence of the Tm 12.84 isoforms of the invention.

ACCESSION NUMBER: AAS21131 **cDNA** **DGENE**
 TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 DESCRIPTION: Consensus sequence of Tm12.84 isoforms.

L5 ANSWER 26 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21130 **DNA** **DGENE**

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA**

libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 5'tail PCR primer used to generate the AFP clones minus the signal peptide of the invention, this primer contains an XhoI site at its 3' end to facilitate cloning.

ACCESSION NUMBER: AAS21130 DNA DGENE
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Tm 13.17 lower primer with Xho I site.

L5 ANSWER 27 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21129 DNA DGENE
AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents the Tm 13.17 5'tail PCR primer used to generate the AFP clones minus the signal peptide of the invention, this primer contains a Bam HI site at its 3' end to facilitate cloning.

ACCESSION NUMBER: AAS21129 DNA DGENE
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Tm 13.17 upper primer with Bam HI site.

L5 ANSWER 28 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21128 DNA DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 12.84 3'tail PCR primer used to generate the AFP clones minus the signal peptide of the invention, this primer contains a XhoI site at its 3' end to facilitate cloning.

ACCESSION NUMBER: AAS21128 DNA DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
DESCRIPTION: Tm 12.84 lower primer with XhoI site.

L5 ANSWER 29 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal**

hysteresis protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21127 DNA DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 12.84 5'tail PCR primer used to generate the AFP clones minus the signal peptide of the invention, this primer contains a Bam HI site at its 3' end to facilitate cloning.

ACCESSION NUMBER: AAS21127 DNA DGENE

TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

DESCRIPTION: Tm 12.84 upper primer with Bam HI site.

L5 ANSWER 30 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21126 cDNA DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during

cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 7.5 clone/his tag fusion protein minus the signal peptide of the invention. This **cdna** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAS21126 **cdna** **DGENE**
 TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: P-PSDB: AAU10055
 DESCRIPTION: **cdna** encoding Tm 7.5/His tag fusion protein minus signal peptide.

L5 ANSWER 31 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21125 **cdna** **DGENE**

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having

greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 7.5 clone/his tag fusion protein of the invention. This **cdna** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm protein.

ACCESSION NUMBER: AAS21125 **cdna** **DGENE**
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNV)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10054
DESCRIPTION: **cdna** encoding Tm 7.5 clone/His tag fusion protein.

L5 ANSWER 32 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21124 **cdna** **DGENE**
AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 3.9 clone/his tag fusion protein minus the signal peptide of the invention. This **cdna** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAS21124 **cdna** **DGENE**
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze

protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: P-PSDB: AAU10053

DESCRIPTION: **cDNA** encoding Tm 3.9/His tag fusion protein minus signal peptide.

L5 ANSWER 33 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21123 **cDNA** DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents a **cDNA** encoding the Tm 3.9 clone/his tag fusion protein of the invention. This **cDNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm protein.

ACCESSION NUMBER: AAS21123 **cDNA** DGENE

TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10052
DESCRIPTION: cDNA encoding Tm 3.9 clone/His tag fusion protein.

L5 ANSWER 34 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21122 cDNA DGENE
AB This invention relates to a cDNA polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species. The present sequence represents a cDNA encoding the Tm 3.4 clone/his tag fusion protein of the invention. This cDNA was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm 3.4 protein.

ACCESSION NUMBER: AAS21122 cDNA DGENE
TITLE: New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10051
DESCRIPTION: cDNA encoding Tm 3.4/His tag fusion protein minus signal sequence.

L5 ANSWER 35 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein

derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21121 cDNA DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cDNA** libraries in an expression system, including cross-species **cDNA** libraries to identify homologous sequences in other species. The present sequence represents a **cDNA** encoding the Tm 3.4 clone/his tag fusion protein of the invention. This **cDNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAS21121 cDNA DGENE

TITLE: New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: P-PSDB: AAU10050

DESCRIPTION: **cDNA** encoding Tm 3.4/His tag fusion protein.

L5 ANSWER 36 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cDNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21120 cDNA DGENE

AB This invention relates to a **cDNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze

protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a **cdNA** encoding the Tm 2.3 clone/his tag fusion protein of the invention. This **cdNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm 13.17 protein.

ACCESSION NUMBER: AAS21120 **cdNA** DGENE
 TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: P-PSDB: AAU10049
 DESCRIPTION: **cdNA** encoding Tm 13.17/His tag fusion protein minus signal sequence.

L5 ANSWER 37 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
 TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 AN AAS21119 **cdNA** DGENE
 AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to

create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a **cdNA** encoding the Tm 2.3 clone/his tag fusion protein of the invention. This **cdNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm 13.17 protein.

ACCESSION NUMBER: AAS21119 **cdNA** **DGENE**
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10048
DESCRIPTION: **cdNA** encoding Tm 13.17 clone/His tag fusion protein.

L5 ANSWER 38 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21118 **cdNA** **DGENE**

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a **cdNA** encoding the Tm 2.3 clone/his tag fusion protein of the invention. This **cdNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm 2.3 protein.

ACCESSION NUMBER: AAS21118 **cdNA** **DGENE**

TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: P-PSDB: AAU10047

DESCRIPTION: **cdNA** encoding Tm 2.3 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 39 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21117 **cdNA** DGENE

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a **cdNA** encoding the Tm 2.3 clone/his tag fusion protein of the invention. This **cdNA** was created to facilitate purification and to try to enhance the anti-freeze activity of the recombinant Tm 2.3 protein.

ACCESSION NUMBER: AAS21117 **cdNA** DGENE

TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10046
DESCRIPTION: **cdNA** encoding Tm 2.3 clone/His tag fusion protein.

L5 ANSWER 40 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21116 **cdNA** DGENE
AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents a **cdNA** encoding the Tm 2.2 clone/his tag fusion protein minus the signal peptide of the invention. This **cdNA** was created to try to enhance the anti-freeze activity of the recombinant Tm 2.2 protein.

ACCESSION NUMBER: AAS21116 **cdNA** DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10045
DESCRIPTION: **cdNA** encoding Tm 2.2 clone/His tag fusion protein minus signal sequence.

L5 ANSWER 41 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21115 **cdna** **DGENE**

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 2.2 clone/His tag fusion protein of the invention. This construct was created to help purification of the protein and to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAS21115 **cdna** **DGENE**

TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: P-PSDB: AAU10044

DESCRIPTION: **cdna** encoding Tm 2.2 clone anti-freeze protein/His tag fusion protein.

L5 ANSWER 42 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21114 **cdna** **DGENE**

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of

the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 7.5 clone of the invention.

ACCESSION NUMBER: AAS21114 **cdna** **DGENE**
 TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
 INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.
 PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 DESCRIPTION: **cdna** encoding Tm 7.5 clone anti-freeze protein.

L5 ANSWER 43 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21113 **cdna** **DGENE**

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having

greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 3.9 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAS21113 **cdna** **DGENE**
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10042
DESCRIPTION: **cdna** encoding Tm 3.9 clone anti-freeze protein.

L5 ANSWER 44 OF 47 **DGENE** COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21112 **cdna** **DGENE**

AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents a **cdna** encoding the Tm 3.4 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAS21112 **cdna** **DGENE**
TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10040
DESCRIPTION: cDNA encoding Tm 3.4 clone anti-freeze protein.

L5 ANSWER 45 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
TI New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
AN AAS21111 DNA DGENE
AB This invention relates to a cDNA polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen cDNA libraries in an expression system, including cross-species cDNA libraries to identify homologous sequences in other species. The present sequence represents the cDNA encoding the Tm2.3 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAS21111 DNA DGENE
TITLE: New cDNA polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M

PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.

(HORW-I) HORWATH K L.

(MYER-I) MYERS K L.

(EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p

APPLICATION INFO: WO 2001-US18532 20010607

PRIORITY INFO: US 2000-210446P 20000608

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: 2002-090137 [12]

CROSS REFERENCES: P-PSDB: AAU10038

DESCRIPTION: cDNA encoding Tm 2.3 clone anti-freeze protein.

L5 ANSWER 46 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
 TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21110 **cdna** DGENE
 AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdna** libraries in an expression system, including cross-species **cdna** libraries to identify homologous sequences in other species. The present sequence represents the **cdna** encoding the Tm2.2 clone anti-freeze protein of the invention.

ACCESSION NUMBER: AAS21110 **cdna** DGENE
 TITLE: New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

INVENTOR: Horwath K L; Myers K L; Easton C M
 PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
 (HORW-I) HORWATH K L.
 (MYER-I) MYERS K L.
 (EAST-I) EASTON C M.

PATENT INFO: WO 2001094378 A1 20011213 364p
 APPLICATION INFO: WO 2001-US18532 20010607
 PRIORITY INFO: US 2000-210446P 20000608
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 OTHER SOURCE: 2002-090137 [12]
 CROSS REFERENCES: P-PSDB: AAU10038
 DESCRIPTION: **cdna** encoding Tm 2.2 clone anti-freeze protein.

L5 ANSWER 47 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN
 TI New **cdna** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAS21109 **cdna** DGENE
 AB This invention relates to a **cdna** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti- freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze

protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the **cdNA** sequence encoding the Tm 13.17 anti-freeze protein of the invention. Note: This sequence differs from the sequence given as SEQ ID 2 in the sequence listing of the specification, the sequence in figure 2 6a has an additional A residue at the 5' end when compared to the sequence on page 308.

ACCESSION NUMBER: AAS21109 DNA DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYNY)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: P-PSDB: AAU10036
DESCRIPTION: **cdNA** encoding Tm13.17 anti-freeze protein.

storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 3.9 clone/his tag fusion protein of the invention. This **cdNA** was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10055 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -
INVENTOR: Horwath K L; Myers K L; Easton C M
PATENT ASSIGNEE: (UYN)UNIV NEW YORK STATE RES FOUND.
(HORW-I) HORWATH K L.
(MYER-I) MYERS K L.
(EAST-I) EASTON C M.
PATENT INFO: WO 2001094378 A1 20011213 364p
APPLICATION INFO: WO 2001-US18532 20010607
PRIORITY INFO: US 2000-210446P 20000608
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2002-090137 [12]
CROSS REFERENCES: N-PSDB: AAS21126
DESCRIPTION: Tm 7.5 clone/His tag fusion protein.

L5 ANSWER 6 OF 47 DGENE COPYRIGHT 2003 THOMSON DERWENT on STN

TI New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**, useful for providing antifreeze protection to improve the quality of food -

AN AAU10054 Protein DGENE

AB This invention relates to a **cdNA** polynucleotide comprising a nucleotide sequence encoding a **thermal hysteresis** protein (THP) which is a Type III anti-freeze protein derived from the **Tenebrionoidea Superfamily**. Anti-freeze proteins lower the freezing point of a solution without affecting the melting point of the solution. An activated anti-freeze protein may be incorporated into plant, produce or fish in an amount sufficient to provide antifreeze protection or in a region of a target tissue to provide antifreeze protein to limit tumour cell or target tissue cryoinjury during cryosurgery. The proteins of the invention may also be used in hypothermic solutions or bathing media to reduce cold damage in order to provide cryogenic or hypothermic preservation of cells and tissues. The proteins may be used as de-icing formulations or used on surfaces to reduce existing ice buildup or abate the formation of ice buildup on surfaces such as a road, aircraft, household products, machinery and plant surfaces or as a food product to improve the quality of food by abating freezing of solutions, freezer burn, or degradation due to cold storage. The polynucleotides for the activated protein can be used to create transgenic or gene-modified plants, crops, fish, or animals having greater tolerance to cold climatisation. The Tm 12.86 antibody/antiserum which is also used as a screening device to screen **cdNA** libraries in an expression system, including cross-species **cdNA** libraries to identify homologous sequences in other species. The present sequence represents the Tm 7.5 clone/his tag fusion protein of the invention. This **cdNA** was created to try to enhance the anti-freeze activity of the recombinant protein.

ACCESSION NUMBER: AAU10054 Protein DGENE
TITLE: New **cdNA** polynucleotide encoding a **thermal hysteresis** protein which is a Type III anti-freeze

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<u>L4</u>	L3 and Tenebrionoidea	0	<u>L4</u>
<u>L3</u>	L2 and superfamily	4704	<u>L3</u>
<u>L2</u>	thermal hysteresis protein	585270	<u>L2</u>
<u>L1</u>	Tenebrionoidea	0	<u>L1</u>

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☐ 1. Document ID: US 6586404 B1

L6: Entry 1 of 6

File: USPT

Jul 1, 2003

US-PAT-NO: 6586404

DOCUMENT-IDENTIFIER: US 6586404 B1

TITLE: Pharmaceutical preparations of glutathione and methods of administration thereof

DATE-ISSUED: July 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Demopolos; Harry B.	Scarsdale	NY		
Seligman; Myron L.	Pleasantville	NY		

US-CL-CURRENT: 514/18; 424/449

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	MMIC	Draw Desc	Image
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☐ 2. Document ID: US 6570001 B1

L6: Entry 2 of 6

File: USPT

May 27, 2003

US-PAT-NO: 6570001

DOCUMENT-IDENTIFIER: US 6570001 B1

TITLE: Polynucleotides and their use for detecting resistance to streptogramin A or to streptogramin B and related compounds

DATE-ISSUED: May 27, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Solh; Nevine El	Vincennes			FR
Allignet; Jeanine	Nanterre			FR

US-CL-CURRENT: 536/23.1; 435/183, 435/252.3, 435/320.1, 435/69.1, 536/23.2, 536/24.3, 536/24.32, 536/24.33

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	MMIC	Draw Desc	Image
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☐ 3. Document ID: US 6541448 B2

L6: Entry 3 of 6

File: USPT

Apr 1, 2003

US-PAT-NO: 6541448

DOCUMENT-IDENTIFIER: US 6541448 B2

TITLE: Polypeptide compositions toxic to anthonomus insects, and methods of use

DATE-ISSUED: April 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Isaac; Barbara	St. Charles	MO		
Krieger; Elysia K.	Kirkwood	MO		
Mettus; Anne-Marie Light	Feasterville	PA		
Moshiri; Farhad	Chesterfield	MO		
Sivasupramanian; Sakuntala	Chesterfield	MO		

US-CL-CURRENT: 514/2; 424/246.1, 530/350

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWAC	Draw Desc	Image
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☐ 4. Document ID: US 6506893 B1

L6: Entry 4 of 6

File: USPT

Jan 14, 2003

US-PAT-NO: 6506893

DOCUMENT-IDENTIFIER: US 6506893 B1

TITLE: Polynucleotides and their use for detecting resistance to streptogramin A or to streptogramin B and related compounds

DATE-ISSUED: January 14, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
El Solh; Nevine	Vincennes			FR
Allignet; Jeanine	Nanterre			FR

US-CL-CURRENT: 536/23.7; 424/234.1, 424/244.1, 435/320.1, 435/6, 435/69.1, 435/91.2, 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWAC	Draw Desc	Image
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☐ 5. Document ID: US 6423687 B1

L6: Entry 5 of 6

File: USPT

Jul 23, 2002

US-PAT-NO: 6423687

DOCUMENT-IDENTIFIER: US 6423687 B1

TITLE: Pharmaceutical preparations of glutathione and methods of administration thereof

DATE-ISSUED: July 23, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Demopolos; Harry B.	Scarsdale	NY		
Seligman; Myron L.	Pleasantville	NY		

US-CL-CURRENT: 514/18; 514/21

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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KWIC	Draw Desc	Image
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☐ 6. Document ID: US 6204248 B1

L6: Entry 6 of 6

File: USPT

Mar 20, 2001

US-PAT-NO: 6204248

DOCUMENT-IDENTIFIER: US 6204248 B1

TITLE: Pharmaceutical preparations of glutathione and methods of administration thereof

DATE-ISSUED: March 20, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Demopoulos; Harry B.	Scarsdale	NY		
Seligman; Myron L.	Fairfield	CT		

US-CL-CURRENT: 514/21; 514/18

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
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